

# 22307

**23124**

**3 Hours / 70 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Assume suitable data, if necessary.  
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following :** **10**
- State any two uses of Duralumin.
  - State the objectives of heat treatment.
  - Give basic steps in casting processes.
  - State the chemical composition of gun metal.
  - List the various angles provided on single point cutting tool.
  - Define Taper turning.
  - List the major parts of column and knee type universal milling machine.

P.T.O.

- 2. Attempt any THREE of the following :** **12**
- a) Distinguish between thermoplastic and thermosetting plastic.
  - b) Draw the sketch of gating system of casting process and show all the parts on it.
  - c) Explain taper turning by swiveling compound rest method with neat sketch.
  - d) Write classification of different types of drilling machines.
- 3. Attempt any THREE of the following :** **12**
- a) Distinguish between ferrous and non ferrous metals with respect to main constituent, conductivity, resistance to corrosion, machinability.
  - b) Explain flame hardening principle and process with neat sketch.
  - c) Explain two types of foundries.
  - d) Explain various materials used for making patterns.
- 4. Attempt any THREE of the following :** **12**
- a) Classify engineering materials with suitable example.
  - b) Illustrate the Iron-Iron carbide (Fe - Fe<sub>3</sub>C) diagram showing critical temperature on it.
  - c) Explain with neat sketch centrifugal casting.
  - d) Suggest suitable pattern with sketch used for production of symmetrical circular parts in foundry process.
  - e) Discuss desired properties and types of cutting fluids.
- 5. Attempt any TWO of the following :** **12**
- a) Classify various aluminium alloys. Write composition and applications of any two Aluminium alloy.
  - b) Classify moulding processes and describe any two moulding processes.
  - c) Explain with neat sketch following operations.
    - i) Facing
    - ii) Knurling
    - iii) Threading

**6. Attempt any TWO of the following :****12**

- a) Differentiate between orthogonal and oblique cutting and state any two properties of cutting tool material.
  - b) Use suitable cutter for carrying following operations on milling.
    - i) Gear Tooth
    - ii) Parting off
    - iii) V-grooves
    - iv) Key Way
    - v) Flat surface
    - vi) T-slot
  - c) Select the proper operation method used on lathe machine for following requirement with justification.
    - i) Produce angle on job
    - ii) Provide grip on job
    - iii) Enlarging previously drilled hole
    - iv) Producing a hole
    - v) Cutting the job
    - vi) Finishing previously drilled hole.
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